SUMMARY

This is the second of a two-volume publication on a methodology for rapid visual screening of buildings for potential seismic hazard. A detailed description of the recommended procedure for identifying potentially hazardous buildings, including information to aid the field surveyor in identifying structural framing systems, is contained in the companion ATC-21 Report, *Rapid Visual Screening of Buildings for Potential Seismic Hazards: A Handbook* (ATC, 1988).

A literature review of existing procedures for rapid visual screening of buildings for potential seismic hazards showed that few rapid screening methods exist in the literature, and that none has widespread application. A survey of practice indicated that present earthquake structural engineering practice may often involve an engineer conducting a "walk-through" survey of a building, but engineering practitioners appear to rely on extensive experience and judgment rather than any formal procedure. Although some rapid visual studies have been performed, mainly in California to identify unreinforced masonry (URM), these are not well documented in the literature.

The literature search and a review of surveys conducted by communities indicated that a satisfactory rapid visual screening procedure does not presently exist. A satisfactory rapid visual screening procedure would include the following attributes: (i) explicit definition of the expected ground motion (i.e., the "earthquake loading"); (ii) consideration of all major building types, not just one or two; (iii) a procedure whereby the degree of seismic hazard is quantitatively determined, thus permitting priorities to be set with regard to mitigation planning and detailed investigations of the most potentially hazardous buildings; (iv) a rational, analytically based framework for this quantitative procedure (in which weights or factors are not arbitrary), whereby the quantitative results relate to physical quantities and have a physical interpretation; (v) ability to be used nationwide and to account for local variations in building practice, loading levels, and site conditions; (vi) recognition and incorporation of probabilistic concepts, to permit treatment of the inherent uncertainties in attempting to identify building types and characteristics; (vii) incorporation of such factors as building age and condition; and (viii) background reference material illustrating building types, various structural hazards and related information.

This report presents a recommended procedure incorporating these attributes. It is based on a Basic Structural Hazard score, which equals the negative logarithm of the probability of major damage, with major damage defined as 60% or greater of the building's replacement value. Values of the Basic Structural Hazard score for 12 building types are determined for the National Earthquake Hazards Reduction Program (NEHRP) (BSSC, 1985) Map Areas 1 to 7, using data from ATC-13 (ATC, 1985). Modifiers on this score are also presented, based on the collective opinion of the Project Engineering Panel and other engineers nationwide for important seismic performance-related factors such as age, poor condition, and soft story. The procedure can be implemented in the field by use of a standard clipboard form, including a field photo and sketch of the building. Information to aid the field surveyor in identifying the appropriate building type and assigning a Basic Structural Hazard score and modifiers, are provided in the associated handbook, (ATC, 1988).